



**CTI - Global Engineering Lab
388/12 Greenwich St., NY, NY – Global Engineering
Process Control Manual**

April 18th, 2005

Citigroup Internal

V1.0

Classification: Internal

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CTI00001167
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Citigroup Technology Infrastructure - CTI Global Engineering Lab

Process Control Manual

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1. Introduction

1.1 Purpose of Document

The CITM Policy document requires organizations to define their processes and procedures to identify, measure, monitor, and control technology-related risk. This Process Control Manual has been developed to address the requirements of the Global Engineering 388 Greenwich St/12th floor labs. These processes include:

1. An annual review of the 388 Greenwich St./12th floor lab environments by the associated CTI- GE Technical Product Managers.
2. A determination of the specific risk management categories applicable to the organization.
3. A methodology for maintaining the security and integrity of the lab environment.
4. A methodology for maintaining hardware and software inventories.

This document discusses the processes and procedures used by the CTI Global Engineering (CTI-GE) group in meeting these requirements.

1.2 Purpose of CTI-GE 388 Greenwich St./12th floor Labs

The CTI-GE mission is "To develop standards based technology that meets all of the relevant information security standards, policies and practices that govern our business, as they relate to technology infrastructure and operational risk management in the infrastructure environment while meeting our customer's needs for newer and cost effective technology solutions." To achieve this end, CTI-GE has established lab environments in 388 Greenwich St./12th floor for lifecycle testing and certifying standard technology solutions prior to recommendation and deployment.

Citigroup Technology Infrastructure - CTI Global Engineering Lab**Process Control Manual****2. Lab Roles and Responsibilities**

The CTI-GE 388G test lab environments are used for the testing, development and certification of new technology, along with the testing of new or unique installation configurations. Global Engineering maintains ultimate ownership of the lab, which is managed by the Lab Coordination Team in support of the product development teams who primarily reside within the 388 Greenwich St. and other NY Metro facilities. Teams residing in the 388G/12 Lab include, but are not limited to, teams within Network Engineering, Collaboration Engineering, Distributed Engineering, and External Services.

Utilization of lab resources is coordinated through the Lab Coordination Team, respective Engineering Teams, and Team Leads.

Function - 388G/12 CTI GE Lab	Responsible
Teams & Team Leads	<p>Digital Media and Collaborative - Tony Raimundo</p> <p>Global Voice/Contact Center/Trading Floor – George Carzis</p> <p>Enterprise Infrastructure Tools/Product Development – Mike Mazzuki</p> <p>Citiplex – Lawrence Chin</p> <p>B2B/CEP – Rob Centra</p> <p>Infrastructure Survivability – Peter Callahan</p> <p>Security Architecture and Assessment – Janet Cugini</p> <p>Transport – Amedeo Discepolo</p> <p>Data Center – Steve Gannon</p> <p>Branch – John Branigan</p> <p>Campus Infrastructure and Convergence Technology – David Young</p> <p>IP Network Services – Bernardo Jimenez</p> <p>Storage Platform – Robert Small</p> <p>Platform/ Products and Services – Art Bernstein</p> <p>OS Platforms – Brian Lenz</p> <p>Platforms/ Product Management – Steve Tatay</p>
Physical Access Entitlement Coordinator	Lab Coordination Team in conjunction with

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	Team Leads
Hardware Inventory Control	Teams
Annual Insurance Questionnaire	Lab Coordination Team
Physical Access Security and Compliance Review	Lab Coordination Team Team Leads
Lab Coordination Team	Paul Holder Carmelo Millan Open Req.

Table 1. Lab Responsibilities**2.1 Functional classification of roles and responsibilities****Teams & Team Leads**

- Vendor primary POC
- Responsible for Test Bed Design and Lab network connectivity
- Validate NDA and Loaners agreement requirements are met
- Technical Product Manager
- Peer group interaction
- Validates compliance with testing, subsequent documentation, distribution of results and other CITMP requirements of Engineered products

Physical Access Entitlement Coordinator

- Responsible to make sure those w/ physical access to lab are approved to do so
- Access control and reconciliation annually

Hardware Inventory Control

- Responsible for initial inventory entry when equipment/software received
- Responsible for inventory removal when equipment/software is retired

Annual Insurance Questionnaire

- Responsible for compilation of annual Insurance Questionnaire based on Individual Team Hardware Inventories

Physical Security and Compliance Review

- Responsible to conduct ad hoc reviews to ensure sure physical access restricted to Lab
- Responsible for Annual Lab Access Reconciliation

Citigroup Technology Infrastructure - CTI Global Engineering Lab**Process Control Manual****Lab Coordination Team**

- Responsible for Lab Support
- Responsible for Lab Space Allocation
- Responsible for Lab Coordination
- Responsible for Loaner Equipment receipt and return
- Physical Lab access control and yearly reconciliation
- Annual Insurance Questionnaire compilation based on individual Team Hardware/Software Inventories
- Responsible for all Lab connectivity, patching, racking, stacking
- Inter-Engineering Discipline liaison
- Overall lab caretakers/gatekeepers
- SME Peer group interaction when necessary

3. Physical Access Controls, Installation Request, and Test Environment Controls**3.1 Physical Security and Authorized Access**

Authorized access to the CTI-GE Lab is restricted to essential engineering personnel. Entry to its location is managed via an access card system. Employees within the Global Engineering group can request access through email communication to both their Team Lead and the Lab Coordination Team. The Team Leads and Lab Coordination Team will provide final approval for parties requesting access. Upon receiving approval, the GE employee's access card will be permissioned via local security administration.

Access to network devices, servers, applications, and tools is maintained via logical access mechanisms that are granted and maintained by the individual Teams utilizing the Lab.

Vendors must be escorted at all times, it is the responsibility of the authorized individual providing access to escort the vendor.

Logical vendor entitlements will be handled based on nature of vendor activity. The Teams handle logical entitlements for vendors. It is their responsibility to determine, maintain, track, and terminate the proper level of entitlement for the vendor activity being performed.

3.2 Installation Request, SLA's, and Standardized Lab Device Nomenclature

All requests for equipment installations, rack & stacks, connectivity, or topology builds are made through the Lab Coordination Team. The requestor will be asked to fill out the Lab installation request form that can be found at "insert link to "388G Lab Installation Request Form", and e-mailed to the, "GT Global Engineering Lab Support" alias. The "388G Lab Installation Request Form" will be used to determine space, thermal, and power requirements. As well as, classify the type of test environment being requested.

A three-day SLA for the initial device, and additional day for each additional device being installed or interconnected should be anticipated for all installation and test bed requests. The SLA clock will start from the time all relevant forms, test plans, topologies, information and equipment have been received and is subject to change based on resource availability. Any changes/additions to the initial request can result in a reset/readjusted SLA.

All devices installed in the lab will adhere to the standardized lab nomenclature, which will include device cabinet or rack location, distinguishing device model #, and quantity of given device in cabinet or rack location. The standardized lab nomenclature will serve to quickly locate lab devices, assist in inventory and loaner management, and facilitate other control/operational lab procedures. If different names are required, they will be maintained as Aliases to the standardized lab name, and it will be the Team and Team Leads responsibility to keep track of them. All request for lab installs, decommissions, and support will be made based on the standardized lab name. **The Lab Coordination Team will only accept request based on the standardized lab nomenclature.**

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The Standardize Lab Nomenclature will adhere to the following guidelines:

All lab device names will be completely lower case. There will be three dash-separated fields used as follows:

rack/cabinet location – distinguishing model # - quantity of device at given location

So the first Catalyst 6500 residing in rack S01 will be given, "s01-6500-01" as it's standardized lab name.

Similarly if a there where three HP Compaq DL380's in cabinet AG04 in the lab they would be labeled, "ag04-dl380-01", "ag04-dl380-02", and "ag04-dl380-03".

Please contact the Lab Coordination Team at, "*GT Global Engineering Lab Support" to suggest any clarification, changes, or problems with the Standardized Lab Nomenclature.

3.3 Test environment definitions

It is noted here that there are significant differences between how equipment is used in a Lab environment. Generally, we classify test networks and distributed equipment used in the GE Lab as "Isolated", "Production Accessible", "Filtered Production Accessible", "Static", and/or "Dynamic/Loaner". The following definitions will serve as the context for these terms in this document and on the lab installation form:

Isolated- Used to describe non-production Accessible equipment being tested as a standalone component or as part of an isolated system, infrastructure, or testing environment. "Isolated" test environments may include "Production Accessible" out-of-band management connections to facilitate testing. In an isolated Lab environment there is no unfiltered or firewalled access with the production network and/or where no unfiltered routes are exchanged directly with the production network.

Production Accessible- Used to describe the "Production Accessible" lab segments used for testing and the equipment residing on them. These segments reside on production managed and locked down network devices and all network changes taking place on these segments follow production regulations and standards. Furthermore, network configurations on these segments/devices are tailored to minimize or negate any possible network impact to production.

Filtered- Used to describe devices that are "Production Accessible" but are filtered network wise via a Firewall or Access list. All "Filtered Production Accessible" lab equipment is also bound by the terms found in Sections 3.4,5&7. Equipment residing on a lab segments that are filtered, but are not permissioned to interact with production can be treated as "Isolated" for purposes of Upgrade, VTM, and Patch Maintenance but must be documented completely by the Lab Coordination Team from a network/connectivity perspective.

Static- Used to describe base-level network infrastructure, distributed infrastructures, systems, software, and/or test equipment that is used to support "Production Accessible" and "Isolated" lab environments which will be leveraged for more than 6-months or indefinitely.

Dynamic/Loaner- Used to describe base-level network infrastructure, distributed infrastructures, systems, software, and/or test equipment that is used to support production accessible and isolated Lab environments which will be tested for less than 6-months. Typically these are devices coming through the lab for hardware certification. Because of the dynamic nature of how this equipment is changed, reconfigured, tested, patched and monitored, it is sometimes unreasonable to track code versions, specific equipment configurations, and patching unless necessary to honor loaner agreement or to receive "Production Accessible" connectivity. If the equipment is classified as "Dynamic Production Accessible" it must follow all applicable terms described in Sections 3.4,5&7.

Static Production Accessible- network and distributed devices are required to be fully inventoried, document, and tracked. "Static Production Accessible" network devices/environments are managed and tracked by the GNCC or in some cases by the team/team lead owning the "Static Production Accessible" device/network. All "Static Production Accessible" equipment is also bound by the terms found in Sections 3.4,5&7.

Citigroup Technology Infrastructure - CTI Global Engineering Lab**Process Control Manual****3.4 Test Environment Controls**

“Filtered/Static/Dynamic Production Accessible” networks/devices - must be fully documented from a network perspective by the Lab coordination team and adhere to all production network operational regulations and procedures. L2MAC request are submitted to the GNCC for Layer 2 port changes and Infomans are submitted for all other changes. Changes are all requested through the lab coordination team and will need team lead approval from the testing engineers lead and possibly additional team lead/TPM approvals (if change can affect system or infrastructure not owned by testing engineer).

Software changes to the “Static Production Accessible” lab network infrastructure in the GE Lab must adhere to all production network operational regulations and procedures.

“Static/Dynamic Isolated” networks/devices- documentation is optional and logical design/configuration/operational duties are handled either by the team owning the testbed, the engineering team responsible for the network product being tested on or against, or the lab coordination team (in cases where the required network expertise is not available within the team requesting the test network and the testing is non-network related).

It is recommended that changes to the “Static or Dynamic/Loaner Isolated” lab infrastructure require, minimally, verbal approval of the Lab Team Lead. Where appropriate, if these changes reflect either inventory control or “Isolated” Lab network diagram changes, these documents should be updated to reflect the change. However, it is *not* necessary to log, update or identify changes to hardware or software configuration, patching or versions of “Isolated” Lab equipment, as long as this equipment remains in an “Isolated” Lab environment.

4. Loaner/Evaluation life cycle management

Loaner and Evaluation equipment will be received, installed, and returned by the Lab Coordination Team. This will ensure all vendor loaner/evaluation agreements time frames are honored and provides a procedure to centrally manage the time frames, equipment, and packaging associated with a loaner’s life cycle.

The following procedure, while listed for Cisco hardware, applies to any vendor product or service under evaluation in the Lab.



IMPORTANT -
Obtaining Cisco demⁿ

A current version of the CRF referenced in the attached email can be found at:

https://casp.ny.ssmb.com/casp/asp/casp_submenu.asp?menu=10§ion_title=20§ion=10

Technology Procurement is responsible for the negotiation of Non-Disclosure Agreements (NDA) and vendor contracts. All equipment owners will follow the standard process for engaging technology procurement prior to the acceptance of any equipment loan or the attainment of evaluation software. A copy of any current executed evaluation documentation (requests, CRFs, etc) must be kept in:

Need a GE share or a centralized distributed and network share.

As part of the Lab inventory documentation, evaluation equipment must clearly be identified as “evaluation”, along w/ applicable inventory information such as model number(s), serial numbers, and software version. The equipment inventories, are maintained by the Teams & Team Leads and can be found at:

Need a GE share or a centralized distributed and network share.

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This section, along with section 6 below, applies *only* to "Production Accessible" Lab infrastructure, test equipment, or Lab equipment that bridges the production and test Labs for purposes of tester access.

If the upgrade and or patch is related to VTM, the Team and Team Leads will follow standard procedures associated with the VTM process. All network changes to existing configurations must be recorded and tracked in appropriate inventory or network diagram documentation.

All the procedures/forms for VTM can be found at: <http://www.citigroup.net/tie/vtm/index.shtml>

Any "Filtered/Static Production Accessible" network, distributed infrastructure, system, or device in the 388G/12 lab *must* adhere to production standards for hardware, software (version) and/or configuration. This is the responsibility of the Teams and Team leads.

Any "Filtered/Dynamic/Loaner Production Accessible" network, distributed infrastructure, system, or device must adhere to production standards for VTM, patch maintenance, and antivirus, if they exist. If no Citigroup Standards exist the distributed device must meet Infosec standards, have antivirus installed (with the latest definitions), have all applicable security patches, and receive Team Lead and possible TPM approval, to be given production access. In addition, if no standard exist, the product under evaluation may be require initial installation on an isolated testbed, for proof of concept and to document and observe product behavior before being put on the "Production Accessible or Filtered Production Accessible" Lab segments. The Citigroup Engineering responsible for certification and TPM responsibilities for said product team will make all initial network, device, or system configurations, to avoid any possible conflicts with production or lab system, services, or infrastructures. All upgrade, patch maintenance, and VTM responsibilities are handled by the Teams and Team Leads.

All "Static and Dynamic/Loaner Isolated" networks, distributed infrastructures, systems, or devices will follow the level of upgrade, patch maintenance, and VTM activity deemed appropriate by the testing Engineer or Team Lead owning/requesting the environment.

6. Software License Maintenance

All software being purchased for lab trials or engineering analysis, must be handled through Technology Procurement's standard process. In the event the engineering effort requires an evaluation version of vendor software, at a minimum, the Lab user/tester must ensure that the vendor resides in CASP. If the vendor is not in CASP a CRF form must be filed with Technology Procurement. The CTI-GE team is responsible, where deemed appropriate, for acquiring or the maintenance of software in the lab. It is the Teams responsibility to notify the Team Leads team of expiring software contracts and/or licenses so that an assessment of the purchase or renewal of software maintenance can be made.

The Teams will maintain as part of the inventory and equipment log, the vendor name, software name and version number that is installed on lab equipment. For "Dynamic" Lab equipment the inventory must document the *initially* procured and/or installed software version, only if necessary for Inventory or Loaner agreement reasons. Any changes to software for "Static/Dynamic Production Accessible" equipment, or Lab infrastructure will follow the process described in Sections 3.4,5&7.

7. Software Management

The Teams from CTI-GE are responsible for maintaining an inventory log to reflect current software versions for "Static Filtered/Production Accessible" distributed Lab equipment and initially installed versions of all "Dynamic" lab equipment. Where "Static Filtered/Production Accessible" lab distributed equipment is running a version that is inconsistent with published GVAST standards, the team responsible for the change must minimally obtain verbal approval from the appropriate Lab Team Leads. The Teams will manage the software changes and adhere to the terms described in Sections 3.4,5&7 of this document. All Lab testers must ensure that software being used for trial, evaluation and analysis purposes has been obtained through an approved vendor. Team Leads must ensure that all vendors providing software reside in CASP. In the event the vendor is not in CASP a CRF form must be filed with Technology Procurement.

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All Network related lab software changes that touch production are handled by the Operational groups that own the network and adhere to all Production standards and regulations.

8. Continuity of Business (COB)

Continuity of Business efforts is not required for the lab environments, as they have no direct impact on the immediate production environment. Replacement parts may be maintained as part of the overall system inventory as defined and documented within Inventory Control.

9. Inventory Control & Insurance Questionnaire

The CTIGE Lab consists of a variety of hardware and software. An accurate inventory of the hardware and software will be maintained by the Teams and must be reconciled against physical equipment at least annually. The Teams make updates to the inventories, within 30 days of installation or return of equipment. An annual Insurance Questionnaire, based on the Team inventories, will be completed by the Lab Coordination Team and maintained in the following location:

Need a GE share or a centralized distributed and network shares

10. Lab compliance and security

The Lab Coordination Team will be responsible for completing a self-assessment (RCSA) on all lab procedures, Annual Insurance Questionnaire, Production related Change request submission and oversight, and Physical Access Control and Reconciliation.

The Teams and Team Leads will be responsible for Hardware/Software Inventories, Vendor lab access, Logical Entitlements, and Upgrade, VTM, and Patch activities.

All Production related lab changes are submitted through the Lab Coordination Team and follow standard production procedures.

11. Terms and Conditions for Lab Usage

- All equipment entering or leaving the 388G/12 Lab facilities should enter or leave the facility through locally accepted ingress/egress, Mail, or Receiving/Shipping procedures and be coordinated through the Lab Coordination Team.
- All lab equipment must adhere to the Standardized GE Lab Nomenclature.
- Loaner/Evaluation equipment in particular should ship directly to the attention of the Lab Coordination Team. It is the Lab Coordination Teams responsibility to ensure the loaner/evaluation life cycle is honored and the equipment is returned to the vendor when testing or evaluation has concluded.
- No equipment, infrastructure or test equipment will be installed, removed, or relocated within the lab without the knowledge and consent of the Lab Coordination Team.
- Information gathered from the Team compiled CTI-GE Lab inventories will serve to compile an accurate inventory of all lab hardware and software and as a basis for the yearly Insurance Questionnaire.